| Notice of Allowability | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/851,856 | MAYS, ROBERT | |
| | Examiner | Art Unit | |
| | Nathan Curs | 2633 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--***

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment of 17 June 2004*.

2. ☒ The allowed claim(s) is/are *1-20*.

3. ☒ The drawings filed on *18 January 2002* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   **Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 5,9,10,13,16
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *17*.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

## EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Ken Brooks on 7 September 2004.

The following corrections should be made to the applicant's claims entered 6 July 2004:

1. (Currently Amended) A communication system comprising: a source of energy to propagate a signal along a communication path; a detector positioned in the communication path; and a filtering system disposed in the optical path; the filtering system having first and second holographic optical elements each of which has a transform function associated therewith to encode the signal, defining an encoded signal, and decode the encoded signal to retrieve the signal for detection by the detector, with the transform function associated with said first holographic optical element matching the transform function associated with said second holographic element.

2. (Currently Amended) The system as recited in claim 1 wherein ~~the filtering system~~ one of said first and second holographic optical elements removes unwanted characteristics from the signal with the unwanted characteristics being selected from a group consisting essentially of amplitude, polarization, wavelength and phase.

3. (Currently Amended) The system as recited in claim 1 wherein each of the first and second ~~filtering system is~~ holographic optical elements are a transmissive element, allowing the signal to propagate between opposing surfaces thereof.

4. (Currently Amended) The system as recited in claim 1 wherein each of the ~~filtering system is~~ first and second holographic optical elements are a reflective element~~, allowing the signal to enter and exit the element through a common surface~~.

5. (Original) The system as recited in claim 1 wherein the signal is an optical signal.

6. (Original) The system as recited in claim 1 wherein the signal is an RF signal having a wavelength in the range of in the range of 1 micron to 1 millimeter, inclusive.

7. (Currently Amended) The system as recited in claim 1 wherein the source of energy includes an array of transmitters to generate a plurality of the signals to propagate along a plurality of axes and the detector includes an array of receivers, each of which is positioned to sense one of the plurality of signals propagating along one of the plurality of axes and the filtering system includes an array of ~~filtering systems,~~ said first and second holographic optical elements, each of said first and second holographic elements of said array being ~~each of which is~~ disposed in one of the plurality of axes, with a subset of the ~~filtering systems~~ first and second holographic optical elements of the array having a surface with the polarizing film being recorded thereon and the holographic transform disposed in a volume thereof.

8. (Currently Amended) The system as recited in claim 1 wherein the source of energy includes an array of transmitters to generate energy to propagate along a plurality of axes and the detector includes an array of receivers, each of which is positioned to sense energy propagating along one of the plurality of axes and the filtering system includes a plurality of filtering systems, each of which has **[[a]]** an additional first and second holographic optical element having a holographic transform function recorded within a volume thereof, with the ~~plurality of filtering systems being arranged in first and second arrays, the~~ first and second holographic optical elements and the additional first and second holographic optical elements and the additional first and second holographic elements defining a first array of said first

holographic optical elements and a second array of said second holographic optical elements, with said first array being disposed between the array of transmitters and the array of receivers and the second array being disposed between the first array and the receivers.

9. (Currently Amended) The system as recited in claim 8 wherein the holographic transform function associated with a subgroup of the ~~filtering systems of the~~ first array, defining a transfer function, differs from the holographic transform function associated with the remaining filtering systems of the first array ~~of filtering systems~~, and the holographic transform function associated with a subset of the ~~filtering systems of the~~ second array matches the transfer function.

10. (Currently Amended) The system as recited in claim 1 wherein one of the first and second holographic optical elements ~~the filtering system includes an optical element~~ has opposed sides with a spherical surface being positioned on one of the opposed sides and a planar surface being disposed on the remaining side of the opposed sides with the holographic transform function being recorded within a volume ~~of the lens~~ thereof extending between the spherical and the planar surfaces.

11. (Currently Amended) The system as recited in claim 1 wherein one of the first and second holographic optical elements has ~~the filtering system is an optical element having~~ opposed sides with a cylindrical surface being positioned on one of the opposed sides and a planar surface being disposed on the remaining side of the opposed sides, with the holographic transform function being recorded within a volume ~~of the lens~~ thereof extending between the cylindrical and the planar surfaces.

12. (Currently Amended) The system as recited in claim 1 wherein one of the first and second holographic optical elements has ~~the filtering system includes an optical element having~~ opposed sides with a spherical surface being positioned on one of the opposed sides and a

rotary symmetric arrangement of grooves defining a Fresnel lens being disposed on the remaining side of the opposed sides with the holographic transform function being recorded within a volume ~~of the lens~~ thereof extending between the spherical surface and the Fresnel lens.

13. (Currently Amended) The system as recited in claim 1 wherein the source of energy includes an array of optical transmitters to generate optical energy to propagate along a plurality of axes and the detector includes an array of optical receivers, each of which is positioned to sense optical energy propagating along one of the plurality of optical axes and the filtering system includes an array of ~~lenses,~~ said first and second holographic optical elements each of which is disposed in one of the plurality of axes and includes **[[the]]** an arcuate surface with the holographic transform being recorded within a volume ~~of the array of lenses~~ thereof.

14. (Currently Amended) The system as recited in claim **[[1]]** 8 wherein ~~the source of optical energy includes an array of optical transmitters to generate optical energy to propagate along a plurality of axes and the detector includes an array of optical receivers, each of which is positioned to sense optical energy propagating along one of the plurality of optical axes and the filtering system includes a plurality of lenses having the arcuate surface with holographic transform function recorded within a volume thereof, with the plurality of lenses being arranged in first and second arrays, the first array being disposed between the array of optical transmitters and the array of optical receivers and the second array being disposed between the first array and the optical receivers~~ the first holographic optical elements of the first array and the second holographic optical elements of the second array are each lenses having an arcuate surface.

15. (Currently Amended) A communication system comprising: a source of energy to propagate a signal along a communication path; a detector positioned in the communication

path; and a filtering system disposed between the source and the detector, the filtering system having first and second filtering ~~apparatus~~ appartuses, each of which has a transform function associated therewith, to encode the signal, defining an encoded signal, and decode the encoded signal to retrieve the signal for detection by the detector, with the transform function associated with said first filtering apparatus matching the transform function associate with said second filtering apparatus.

16. (Currently Amended) The system as recited in claim 15 wherein the source of optical energy includes an array of optical transmitters to generate optical energy to propagate along a plurality of axes and the detector includes an array of optical receivers, each of which is positioned to sense optical energy propagating along one of the plurality of optical axes and the filtering system includes an array ~~filtering systems~~ of lenses, each of which includes the first and second filtering apparatuses, disposed in one of the plurality of axes, with each of the ~~first and second filtering apparatus defining a lens~~ lenses of the array having an arcuate surface with the transform function being recorded within a volume thereof.

17. (Currently Amended) The system as recited in claim 16 wherein the ~~source of optical energy includes an array of optical transmitters to generate optical energy to propagate along a plurality of axes and the detector includes an array of optical receivers, each of which is positioned to sense optical energy propagating along one of the plurality of optical axes and the optical system including a plurality of lenses having the arcuate surface with holographic transform function being disposed within a volume thereof, with the plurality~~ array of lenses ~~being~~ are arranged in first and second arrays, with the first array being disposed between the array of optical transmitters and the array of optical receivers and the second array being disposed between the first array and the array of optical receivers.

18. A communication system comprising: an array of optical transmitters to generate optical energy to propagate along a plurality of axes; an array of optical receivers, each of which is positioned to sense optical energy propagating along one of the plurality of optical axes; a first array of refractory lenses, each of which is disposed in one of the plurality of axes and having a transform function recorded throughout a volume, with the transform function associated with a subgroup of the lenses of the first array differing from the transform function associated with the remaining lenses of the first array of lenses and defining an encoding function to encode the signal, forming an encoded signal; and a second array of refractory lenses, each of which is disposed between the first array of lenses and the array of optical receivers to collect the encoded signal, with a subset of the lenses of the second array having a second transform function recorded in recorded in a second volume thereof, to retrieve the signal by decode the encoded signal and directing the signal onto one of the optical receivers.

19. The system as recited in claim 18 wherein the lenses of the first and second arrays have a spherical surface and an additional surface disposed opposite to the spherical surface, with a Fresnel lens being disposed on the additional surface.

20. The system as recited in claim 18 wherein the lenses of the first and second arrays have a cylindrical surface and an additional surface disposed opposite to the cylindrical surface, with a Fresnel lens being disposed on the additional surface.

JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600